

Flash, Spirit, Plex, Stretch: A Trans-Disciplinary View of the Media Sensorium

Rhonda N. McEwen
University of Toronto

ABSTRACT

Background *This article takes a transdisciplinary view of the media sensorium by applying humanities, social science, and engineering perspectives to the relationships among sensory perception, cognition, and how people come to understand their worlds through the senses.*

Analysis *The goal of this article is to engage with the provocation that the sensorium, a concept that Marshall McLuhan brought to media studies in the 1960s, provides the lens through which we observe that communication is the expression of cognition via the combined potentiality of physiology and technology. “Sensory technologies” are used as analytical vehicles in a technological journey from the Walkman to 21st-century telecommunications.*

Conclusion and implications *The reader is given a call to action to use the full spectrum of the sensorium to locate and act on transformative contemporary processes underway.*

Keywords *Sensorium; Cognition; Devices*

RÉSUMÉ

Contexte *Cet article adopte une approche transdisciplinaire envers le sensorium médiatique en appliquant des perspectives provenant des sciences humaines, des lettres et de l'ingénierie aux rapports entre la perception sensorielle, la cognition et la manière dont nous appréhendons notre monde par les sens.*

Analyse *L'article a pour but d'examiner cette idée provocatrice que le sensorium—concept que Marshall McLuhan applique aux médias dans les années 1960—nous permet d'observer comment la communication, en exploitant un potentiel à la fois physiologique et technologique, parvient à exprimer la pensée. Ainsi, les « technologies sensorielles » servent de véhicules analytiques dans un voyage technologique qui va du Walkman des années 1970 jusqu'aux télécommunications du présent siècle.*

Conclusions et implications *Cet article invite le lecteur à maximiser le potentiel du sensorium afin de repérer les processus transformatifs en cours actuellement et d'agir sur eux.*

Mots clés *Sensorium; Cognition; Dispositifs*

Rhonda McEwen is Assistant Professor at the Institute of Communication, Culture, Information and Technology at the University of Toronto Mississauga, and the Associate Director of Semaphore Lab at the Faculty of Information at the University of Toronto. Email: rhonda.mcewen@utoronto.ca .

Introduction

Marshall McLuhan's contribution to media scholarship is so familiar—both to scholars and, due to broadcast media and cultural productions, the intelligentsia of the general population—that it is easy to overlook how his work has resonated in cognate fields of study. One such area can be described as sensory studies, involving humanities, social science, and psychology scholars who focus on the relationships among sensory perception, cognition, and how people come to understand their worlds through the senses.

For example, anthropologist and sensory scholar David Howes (2005) asserts that perception is a cultural construct that is mediated through the bodily senses of sight, hearing, smell, taste, touch, and so on. This feels essentially familiar to the ways that McLuhan (1991) defined media as having effects on individual or collective understanding, thought, behaviour, and attitudes, that is, on how we sense and perceive. Where Howes and McLuhan disagreed is on whether or not the senses could be disaggregated in an analysis of effects. For Howes, the senses need to be considered in their simultaneity, while McLuhan posited that media have differential and biasing effects on our individual senses. Nevertheless, both agree that the senses are important in the understanding of perception and effects.

Taken together, these two sets of ideas form a complimentary and bidirectional interconnection where, directed by our senses, media are both constructed by and have an effect on our perception. In this article, a connection is made to McLuhan's ideas on the sensorium in the form of a reflection on how his initial ideas can be extended to consider media, perception, and the nature of the senses. The primary goal of this reflection is to engage with the provocation that the sensorium provides the lens through which we observe that communication is the expression of cognition via the combined potentiality of physiology (i.e., the anatomy of our senses) and technology (in the form of media). In addition, rooted in McLuhan's analytical technique, which contextualizes media in the history and practice of their use, the sensations to the cognitive assemblage from which we make sense of our daily lives can be added. The following reflection or response to the provocation is an exploration in four quadrants of a whole. They are subtitled: Flash, Spirit, Plex and Stretch.

Flash

The year was 1979. Pink Floyd released *The Wall* and Michael Jackson released *Off the Wall*, both of which were considered breakthrough collections and described by *Rolling Stone* (2012) magazine as among the greatest albums of all time. It was also the year that Sony serendipitously launched the Walkman to global markets with extraordinary success (Franzen, 2014), at a cost of U.S.\$200 for the pleasure. In its rapid rise, the Walkman elevated the utility and importance of earbud-type headphones and delivered mobile music experiences to a worldwide audience of users ready to take self-selected sound from their pockets to their ears.

In 1979, for the same U.S.\$200 you could be the owner of an Atari Video Computer System with nine possible game cartridges. A few months later your tenth game would be *Space Invaders*, the arcade then home console game that, when adjusted for inflation, remains the highest-grossing video game ever made, and is considered to be the game that transformed a niche market into a global computer gaming industry

(Montfort & Bogost, 2009). The Atari platform provided an alternative purpose for the television, temporarily turning it into a non-broadcast content device for a separate and (still) unregulated industry. With over 30 million consoles sold, it was a harbinger of a desire to bring tactile, visual, and auditory sensory experiences from the arcade into the home.

The year 1979 was bracketed by two of Marshall McLuhan's more influential books: *Understanding Media: Extensions of Man* published in 1964 and *Laws of Media* posthumously published by his son Eric in 1988. In both publications, McLuhan demonstrates his approach to media studies, which insists on an examination of the historical and social context of communication technologies to more fully grasp their full effects; a conceptual approach described as *figure and ground* (McLuhan & McLuhan, 1992). This approach shares philosophical roots with Gestalt psychology, which considers human perception to be derived from the complexity of interactions from sensory and other systems. This results in an approach to media analysis that ties the interplay of history and specific social and cultural contexts to the consideration of human-technology interaction on a sensory level.

So, back to 1979 with a personal childhood reflection. After judiciously saving pocket money for 12 months, I was the fortunate owner of a Kodak Tele-instamatic 608, 110 film camera with several flip-flash strips for indoor footage. While the Walkman or Atari console was not within reach, for U.S.\$33.50 (tax included), I joined consumer ranks with a portable high technology. It was gorgeous, sleek, mobile, and the first thing I ever saved for and bought. All of the contemporary rhetoric of moral hype surrounding technology addiction would have applied, saved only by the not insignificant cost of film cartridges and flash strips. That camera was with me like a second skin.

Everything about that sexy beast was sensory: the feel of it snuggled in your back pocket, the sound of snapping open the lens cover, the somewhat firm resistance pressure of the shutter release button, the somatosensation in the form of butterflies fluttering in your stomach just before the POP of the flash-bulb blowing, the smell of the zirconium foil burning, and the taste of sweet popularity that flowed from the answer to the question, "Is that your camera?" "Yes!"

I was inseparable from that camera. Through the viewfinder I could compose mini-stories and over a short time, I developed a way of focusing on my environment by creating boundaries around objects I thought would be a good photo. I especially loved photographing people, and in particular their gaze. I had the idea that the camera was my window to their soul. It was my idea—and Aristotle's, he is attributed with articulating the five senses and thought of them as entry points to that intangible and essential part of a person: the soul. The thing about our senses is that we often think of them as individual entities; we are likely to consider our eyes and sight as separate from our ears and hearing. In *The Global Village: Transformations in World Life and Media in the 21st Century*, Marshall McLuhan and Bruce Powers (1992) described a multisensory view of the world ushered in by the widespread adoption of electronic media, which brought an engagement of many senses at once versus a focus on a vision-dominated, linear and sequential paradigm that was predominant with print media.

As I reflect on it now, the connection between what I could see through the viewfinder and the press of the shutter release was real. The visual and the tactile are connected. Enmeshed. As if I was hand-selecting the image, arranging it with my fingers—I could touch with my eyes. Synesthesia describes a neurological condition where stimulus from one sensory source is involuntarily attributed to another. Seeing sounds. Hearing colour. Feeling and sight. In “Inside the Five Sense Sensorium,” McLuhan states (1961), “For, in practice, tactility is less a separate sense than it is the interplay among the senses. When therefore I speak of the tactility of the television image, I mean this stepped-up interplay of the senses which the 19th century artists and polemicists struggled to foster in an aesthetically starved milieu” (p. 46). This was part of McLuhan’s critique of 19th-century print and its industrial organizational extensions, which he felt was in denial about the sensory power of multimedia.

However, buried in that sentence is another treasure, “tactility is less a separate sense than it is the interplay among the senses.” This perspective on the combined nature of the senses is often lost in analyses of McLuhan’s concepts on the sensorium, yet it is one of the more powerful. The senses are often artificially separated for analytical clarity and for metaphorical effect, but in reality there is a great deal of interchange and combination both cognitively and philosophically regarding the senses.

So, the flash offers a brief moment of illumination where objects or ideas that are difficult to see become clearer. The flash is at once temporal, grounding, and galvanizing. It encompasses visual, tactile, and, in 1979, olfactory and auditory information that an image was captured. The camera is an example of multisensory media, and it is a technology that continues to attract both amateurs and experts, even as it changes form over time.

Spirit

The English word “spirit” is derived from the Latin word for “breath.” Hence its use in the sense of vitality, power, strength, and will. Biblically, spirit is described as a wind. Thus we have come to associate both essentiality and ephemerality with spirit. Spirit is not tangible but it nevertheless is real. In a psychology textbook by Daniel Reisberg (2016), the chapter on perception begins with the questions, “What is *real*? How do you define *real*? If you are talking about what you can feel, what you can smell, what you can taste and see, then ‘real’ is simply electrical signals interpreted by your brain. This is the world that you know” (p. xiii [emphasis added]). Any movie buff will recognize this as part of the script from the movie *The Matrix* (1999) when Morpheus answers a question from Neo.

Almost two decades ago, as a student of engineering I developed a fascination for electrical signals in communications media. An electrical signal, like a spirit, is not exactly tangible but a quick zap of current through the body tells you it is real. Five years prior to my graduate school engineering studies, I had fallen in love with the study of how people communicate through signals. Everywhere there were signals: in gestures, expressions, private jokes, clothing choices, and media such as fax machines and the telephone. Media as the embodiment of signals. Signals became my siren call, and through the viewfinder in my head I would begin to see them everywhere. I love signals the way some people love cake.

Today, I study the electrical signals in our brain delivered by our sensory apparatus: eyes, ears, nose, tongue, and, particularly, our skin. I am currently studying the implications of the signals sent to our brains via our skin and how the signals from neurons affect the way we make sense of our interactions—signals causing signals—and grappling with ideas around how technological artefacts are implicated in the exchanges. The very spirit of my work includes considering how the senses combine with and through technologies and the effect that these combinations have on how we process information. For example, considering the consequences for learning when we use virtual reality headsets involves a more thorough understanding of, among other things, the relationship between visual and proprioceptive senses in non-tactile environments.

Katz and Aakhus (2002), prominent mobile media scholars, use the term “apparategeist” to describe the ways that people develop relationships with their technologies, and how they seek to find transcendental ways to communicate. Apparategeist, as a word, translates loosely as spirit (geist) of the machine (p. 11). Sprit of the machine extending to us, and/or the machine as an extension of man. McLuhan (1961) wrote,

I am working from the observation that our technical media are extensions of our senses. The latest such extension, television, I am suggesting, is an extension, not just of sight and sound, but of that very synesthesia which the artists of the past centuries have stressed as accessible via the tangible-tactile values of the new vision. Television is not just sight and sound, but tangibility in its visual, contoured, sculptural mode. What have been the social effects of this sudden extension of our sight-touch powers? What have been the specific changes in our attitudes to public space, to privacy, and to the nature of environmental materials resulting from television? (p. 46)

The new vision McLuhan describes is fascinating, even today. It is a vision, an orality, a sense of direction, and a sense of movement that are all potentially imbued with tactile properties. Again, we can see the embodiment of the geist in media, where the sprit extends the reach of media beyond the tactile. Tactile that goes beyond touch and beyond a consideration of the nerve structures distributed in varying densities in the skin. Touch that goes beyond the discovery that 20th-century engineering psychologists made, beautifully documented by David Parisi (2018) as, “imagin[ing] touch as an informative network capable of interacting with information transmission machines” (p. 149). Interactions of touch change the way we understand the techno-material world. My experimental research asks: What is the nature of the signal delivered through the fingers and the eyes to the brain, and what do the signals in the brain do with it? When we touch a tablet, what are the implications for understanding? What are the specific changes in our attitudes to ourselves and each other when we tap out messages on Facebook or SnapChat?

Parisi (2018) also investigates the cultural construction of touch interactions with technology, and he says, “the addictive popularity of touch-screen videogames, such as *Angry Birds*, *Candy Crush*, *Cut the Rope* and *Fruit Ninja*, derives in part from wildly tapping and frantically swiping the screen” (p. 283). My own research revealed that hands-on interactions with tablets affect our cognition, providing information for later learning.

Gestures do more than send signals—they can shape our understanding, and we actively and inseparably integrate the touch interactions with devices into our thinking (McEwen & Dube, 2017). Perhaps this is an example of how far McLuhan's new vision can be observed. Where spirit meets signal meets touch, we may find a product of the new vision.

Plex

Plex is an important suffix in telecommunications and computer networking. Derivatives of plex describe four types of communications channels that are used in information transfer. A simplex channel is unidirectional, information flows one way from a sender to a receiver. No feedback is possible, similar to a traditional television transmission or classic radio program. A half-duplex system allows for two-way communication, but flows use all of the channel when transmitting so turn-taking is necessary. Citizen-band (CB) radios or generation one walkie-talkies are examples of half-duplex systems. To make communication effective, additional information is necessary to indicate the end of one side and signal readiness for receiving a response. In many ways, while not a half-duplex system, messaging applications such as Whatsapp and Messenger culturally work on a similar principle: users wait when they see an indicator that a message is incoming to avoid taking the exchange out of sequence.

In a full-duplex system, two people communicate simultaneously. Phones are full-duplex to reduce (or in the case of interruption, negate) the time between listening and speaking. The telephone was a revolution in analogue media. People could speak at the same time. This could lead to some confusion, as auditory processing occurred without the additional benefit of vision to provide additional cues on when to speak and when to wait. Full-duplex requires paying attention to the rhythm of the interaction, and focusing on cadence and conversation arcs. It becomes easier over time both because of increasing familiarity between the speakers and also because prolonged time provides space for correction and clarification if simultaneity obfuscates.

Finally, there is multiplexing, which is a method that combines multiple analogue or digital signals into one signal over a shared medium. Multiple signals combined simultaneously. Many simultaneous conversations. More content down the same channel—achieving crazy speeds on gigabit-speed optical networks. Dial-up channels no more, no need for waiting around or focusing on cadence. Link efficiencies are calculated by multiplying the time to watch a frame (which is a digital transmission unit) by the number of frames, then dividing the result by the total time spent sending data. Reduce that time spent sending data and achieve glorious efficiency and speed!

Back to touch for a moment. Speaking of speed, here is a fun fact about information travelling from the skin to the brain: the brain registers pain slower than it does excitement. Indeed, this means that we can laugh faster than we can cry. The dorsal column-medial lemniscal (DCML) pathway is a pathway in the central nervous system that conveys information about light or fine touch from the skin and joints to the brain. A vibration from your mobile phone travels along the DCML. The sensory receptors in the skin include some with wider diameter axons and fewer synapses conveying tactile and kinesthetic information for planning and executing rapid movement where quick feedback is a must—such as pulling away from a tickle or rapidly getting your phone out of a pocket to answer it. Excitement is fast!

The spinothalamic pathway includes a number of sequential synaptic jumps from within the spinal cord, thus slowing down conduction to the neurons in the brain. To complement the slow transmission, the nervous system provides a mechanism for inhibiting pain perception so one does not feel immediate pain. This built-in self-protection mechanism is considered to be an evolutionary throwback. If you stub your toe while running from the large and hungry predator, for example, you need to run and feel the pain after you get out of harm's way. The simultaneity of slowing down pain and speeding up excitement. Neurological channels flowing in multiplex. A recipe for survival.

So the physiological design of our bodies knows that speed is not always valuable. In the Urban Dictionary (n.d.), “plex” is to fight or get mad, and speaks of friction. If you want to plex we are on; my crew versus yours. Flame wars online, speedy responses to comments and emails, and quick often thoughtless tweets are all examples of using speed to respond in an ideological fight. McLuhan (1961) said, “Town planners are familiar with the new lines of force exerted upon already existing urban spaces by faster vehicles and by air travel. At a more personal level, the already existing habits of visual perception are today being radically modified by electric information movement, for the *instantaneous* creates an entire field of relations where before had been only a segment or a fragment or a single point of view” (p. 48, emphasis added).

Simultaneous communication provides the potential for irreparable misunderstandings and highly emotional reactions in a feedback forum: hate and plex on our social platforms. The instantaneous creates an entire field of relations where there was previously only a single point of view. Multiplexing single points of view as fast as we can to create fields of niche interest groups splinters factions; it creates a multiplicity all speaking at the same time and no one listening to each other. We only hear our own voices. As we speed up the excitement, our bodies tell us the pain will come much later.

Stretch

Stretch conjures up mental images of lengthening or widening without breaking. A stretch of land can also be seen in a photo, or we can recall a walk along a stretch of beach. In business we speak of stretch goals to strive toward a promotion—taking our performance beyond the normative boundaries—or in a bid to exceed revenue targets. In mathematics a stretch is an algebraic transformation involving an invariant line and a scale factor. After the transformation there is a change in location of some of the properties of the object, but its basic form remains the same. In other words, the scale factor changes the conditions or the context surrounding the object, but the object remains recognizable as itself. Therefore, a stretch means that the scale factor has had an impact, but the fundamental nature of the object or person remains the same.

Perhaps our ideologies or our principles can undergo a stretch in the form of a challenge. Debates, fake news, discord online and off. Caricatures of political leaders and the strengthening of stereotypes that deepen lines of division and erase tolerance. Stretching to a breaking point. Stretching can also be uncomfortable in the way of most change. For athletes, a stretch can prevent an injury by sending information to the muscles and tendons that they need to get ready to move before an event, and to let them know that they have permission to relax after. Might we hope that the same

is true of stretches affecting the way we see an issue: the stretch readies us for a change so we are better prepared for the challenge and better equipped for the recovery.

The fascinating thing about a stretch is that it suggests there is a transformation underway, yet the end result may seem remarkably similar to the original. Stretches can defy transformation, particularly when elasticity is a property of the object. The object seeks to revert as close as possible to its original form, even while the conditions around it are changed. Therefore, no matter how the logic or the data challenge a previous idea, the transformation may be temporary—if there is any movement at all.

The thing about transformations is that even when dramatic changes occur, the underlying processes are sometimes not visible. My 92-year-old grandmother used to say, “When did I get so old?” It crept up on her stealthily until one day there was no denying the stretch had taken place. But really, when? When did we stop having a home phone? When did touch overtake voice as the primary input on communications media? When did the world tilt to the right? When did we stop being immigrants and come to fear the very word itself? Are the underlying processes so subtle that we cannot see the transformation until the change emerges fully formed, while everyone around us appears not to have stretched at all? Or have we all been stretching at the same rate so in our eyes everything appears unchanged?

Inferences are a core feature of perception. When we look at a very slow movement—the growth of a tree, for example, or the movement of an hour hand on a clock—we often cannot discern the motion involved. Nevertheless, if we let sufficient time pass we infer that movement has taken place due to a change in position: a transformation. There is an extremely rare condition, akinetopsia, where someone is completely unable to perceive motion even though other aspects of their vision are operating within normative bounds. Persons with akinetopsia have difficulties following conversation (their perception of changes in facial expression and lip movement is compromised), but their brains adapt and fill in information to accommodate this loss. They make inferences.

We must make inferences all day long, both perceptually and ideologically. We do so to process all of the partial information continuously signalling our brains. How we make sense of partial information coming from our senses is still largely a mystery, but psychologists have been able to identify common mechanisms we employ. One is amodal completion, where our brains provide a representation of the parts of an object for which information is missing. If, for example, if we see a dog peeking from behind a wall, our perceptual system will represent the part of the dog that we cannot see (Nanay, 2018). Tactile completion is where we form an understanding of a surface based on touching a small section. Perhaps ideological completion is where we formulate a representation based on partial information.

The brain seeks balance and understanding to maintain our sanity. So it can also be plastic, in a sense stretching and relearning to accommodate the imperfections of our environment, our political messes, our emotional states, and our own sensory deficits. In *Understanding Media* McLuhan said (1994), “Innumerable confusions and a profound feeling of despair invariably emerge in periods of great technological and cultural transitions. Our ‘Age of Anxiety’ is, in great part, the result of trying to do

today's job with yesterday's tools—with yesterday's concepts" (p. 274). McLuhan could well be describing our current social climate, with feelings of despair and heightened anxiety around the globe. The desire for disconnection from social technologies is a cry for balance in what feels like an unstable time. McLuhan reminds us that we have been here before; the history of media is populated with many examples of technological and cultural transition.

McLuhan (1961) also said, "If our massive new electric media are direct extensions of sight and sound and touch and kinesthesia, is there not urgent need to consider a possibility of a consensus or ratio and balance among these for our collective sanity? Even the slight disturbance of the balance among our private senses can drive us to wits' end. We live in a time when whole peoples have gone out of their wits when impelled by new massive forms such as radio. Psychologists explain that when the field of attention has a centre without a margin we are, in effect, hypnotised" (p. 51). Fast forward to 2019, is the medium of the internet driving us to our wits end?

Let us collectively stretch, yawn, and wake up from this hypnosis. Let us examine our inferences and use the full spectrum of the sensorium to locate and act on the transformative processes underway. The sensorium, indeed, provides a lens through which we can consider that communication is an expression of what we have perceived and understood through the interplay of our senses and media.

References

- Franzen, Carl. (2014). The history of the Walkman: 35 years of iconic music players. *The Verge*. URL: <https://www.theverge.com/2014/7/1/5861062/sony-walkman-at-35> [March 31, 2019].
- Havers, Grant. (2003). The right-wing postmodernism of Marshall McLuhan. *Media, Culture & Society*, 25(4), 511–525.
- Howes, David. (2005). *Empire of the senses*. Oxford, UK: Berg Publishers
- Katz, J. E., & Aakhus, M. (Eds.). (2002). *Perpetual contact: Mobile communication, private talk, public performance*. Cambridge University Press.
- McEwen, Rhonda, & Dubé, Adam. (2017). *Understanding tablets from early childhood to adulthood: Encounters with touch technology*. New York, NY: Routledge.
- McLuhan, Marshall. (1961). Inside the five sense sensorium. *Canadian Architect*, 6(6), 49–54.
- McLuhan, Marshall, & McLuhan, Eric. (1992). *Laws of media: The new science*. Toronto, ON: University of Toronto Press.
- McLuhan, Marshall, & Powers, Bruce R. (1992). *The global village: Transformations in world life and media in the 21st century*. Oxford UK: Oxford University Press
- Montfort, Nick, & Bogost, Ian. (2009). *Racing the beam: The Atari video computer system*. Cambridge, MA: MIT Press.
- Nanay, Bence. (2018). The importance of amodal completion in everyday perception. *i-Perception*, 9(4), 1–16.
- Parisi, David. (2018). *Archaeologies of touch: Interfacing with haptics from electricity to computing*. Minneapolis, MN: University of Minnesota Press.
- Plex (n.d.). *Urban dictionary*. URL: <https://www.urbandictionary.com/define.php?term=plex> [October 20, 2019].
- Reisberg, Daniel. (2016). *Cognition: Exploring the science of the mind* (6th ed.). New York, NY: WW Norton & Co.
- Rolling Stone Magazine*. (May 31, 2012). 500 greatest albums of all time. URL: <https://www.rollingstone.com/music/music-lists/500-greatest-albums-of-all-time-156826/bruce-springsteen-born-in-the-u-s-a-3-153267/> [March 31, 2019].
- Wachowski, Andy, & Wachowski, Larry [Directors]. (1999). *The Matrix* [DVD]. Hollywood, CA: Warner Bros. Pictures.